4.5 Torrance Facility
Montgomery Watson
Soil Stockpile Report
No. 3, 4 & 5

Soil Stockpile Report
Parcel A, Report No. 3

McDonnell Douglas C-6 Facility
Los Angeles, California

July 1997

MONTGOMERY WATSON

SOIL STOCKPILE REPORT
PARCEL A
REPORT NO. 3

McDONNELL DOUGLAS C-6 FACILITY
LOS ANGELES, CALIFORNIA

July 1997

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Appendices for this document are on file at Boeing Realty Corporation, Long Beach, California.

SECTION 1.0

INTRODUCTION

In October 1996, Montgomery Watson (Montgomery) was retained by McDonnell Douglas Realty Company (MDRC) to assist with the redevelopment of Parcel A (the Site) of their C-6 facility located in Los Angeles, California. Figure 1 presents the C-6 facility. Figure 2 delineates the Site. (Note: Building 40 was previously not included in the Site as reported by Montgomery (1997 (e,f)) — Building 40 has since been included in the Site as presented herein.) The Site was formerly used to manufacture and store aircraft parts.

1.1 OVERVIEW

The Site consists of the northernmost quarter of the C-6 facility, encompassing approximately 50 acres. Demolition of the following buildings at the Site has occurred: Building 29, 33, 34, 36, 37, 57, 58, 61, and 67. Demolition of the following buildings is pending: Building 40, 41, 43/44, 45, and 66-A.

Information gathered during the data compilation and evaluation phase of this project indicated the presence of petroleum products and other chemicals of concern in the surface and subsurface.

A soil sampling and remedial excavation effort is being conducted in conjunction with the removal of foundations, slabs, and below-ground structures. The purpose of this effort is to assess soil quality and remove soil affected with petroleum hydrocarbons and other chemicals of concern in preparation for redevelopment of the Site. Soil which is determined to be affected with petroleum hydrocarbons and other chemicals is excavated and stockpiled at the Site.

Stockpiled soil discussed in this report has been generated from remedial excavations conducted within Building 37 and the adjacent area to the east, known as "the Gravel Yard."

1.2 PURPOSE AND OBJECTIVE

The purpose of this document is to evaluate the quality of the stockpiled soil generated from the remedial excavations discussed in this report. Specifically, this document is the third in a series of stockpile reports which follows the facility-wide strategy for assessing and screening the analytical data so that the stockpiled soils can be divided into two categories: 1) soils requiring treatment or off-site disposal, and 2) soils suitable for use as construction backfill at the Site.

Along with its companion document, *Post-Remedial Excavation Confirmation Sample Report, Parcel A, Report No. 3* (Montgomery Watson, 1997(d)), this report documents that the Site excavation efforts meet the soil screening criteria established in Section 3.1 of this report.

SECTION 2.0

BUILDING 37 AND GRAVEL YARD REMEDIAL EXCAVATION STOCKPILES

Building 37 housed foundry operations in the south central portion of the building, and large machine presses and lathes throughout the building. Foundry and press machines were contained in 15 large pits (approximately 8 feet deep, 20 feet wide, and 60 feet long). A ground floor room on the east side of the building housed the tooling department where employees would produce parts for the machines throughout the facility. A parts cleaning tank sat in a sump within this room. Two clarifiers were located outside the east wall of the building. A hydraulically-powered elevator was located inside the northeast portion of the building.

The adjacent area to the east of Building 37 was the Gravel Yard used for storage of miscellaneous materials and parts from the manufacturing operations of the facility. The facility storm drain outfall to the storm sewer is located near the northeast corner of this area. Historically, a railroad spur crossed the area of the Gravel Yard trending from south to north.

The location of each remedial excavation discussed in this report is presented in Figure 3. To facilitate locating samples and other features in the field, a 20-foot by 20-foot grid has been superimposed over the footprint of Building 37 and the Gravel Yard east of Building 37 as presented in Figure 3. Remedial excavations were recorded using the following nomenclature:

Building No. (B#) - Remedial Excavation (RE) - Chronological Number (#)
e.g., B37-RE-4

Pertinent information related to the remedial excavations conducted within and adjacent to Building 37 and the associated stockpiled soil discussed in this report is presented below. The locations of each stockpile are presented in Figure 4 through Figure 6.

Excavation/Stockpile(s)	Approximate Volume	Date of Excavation	Stockpile Location(s)
B37-RE-4/AM	70 cu yds	9 May 97	West of Building 61 footprint
B37-RE-4/AN — AP	86 cu yds total	2 Jun 97 — 25 Jun 97	Within Building 37 footprint
B37-RE-5/A — D	1085 cu yds total	24 Apr 97 — 12 May 97	West of Building 61 footprint

Remedial excavation B37-RE-4 originated within Building 37 and extended beyond the footprint toward the east, into the Gravel Yard. For this reason, remedial excavation B37-RE-4 remained designated as a Building 37 excavation and was not designated differently within the Gravel Yard.

2.1 SOIL SAMPLING

Grid sampling, hot spot sampling, and confirmation sampling have been employed at Building 37. Detailed procedures for these activities are outlined in the *Sampling and Analysis Plan for Demolition Activities at the Douglas Aircraft Company C-6 Facility* prepared by Integrated Environmental Services, Inc. (IESI, 1997(a)) and previously submitted to the Regional Water Quality Control Board (RWQCB). In addition, stockpile sampling was performed on the excavated material. These procedures can be summarized as follows:

2.1.1 Grid Sampling

Grid sampling was collected at predetermined, regular intervals of a grid placed over the footprint of Building 37. A 20-foot by 20-foot grid was employed.

Grid samples were collected by first exposing "fresh" soil beneath the surface using a stainless steel utensil or similar device. A photoionization detector (PID) was used to measure headspace organic vapor concentrations in the freshly exposed soil at each grid node. Soil samples were collected for analysis where at least one of the following conditions existed: 1) the headspace VOC reading exceeded 5 ppm, (2) areas where staining of the soil was visible, or (3) areas where odors were noticeable.

Soil samples were collected for analysis in pre-cleaned, stainless steel sleeves by driving the sleeve into the soil with a rubber mallet or drive sampler. The ends of the sleeves were then covered with Teflon film and secured with plastic end caps. A unique sample identification using the following nomenclature was written in indelible ink on a sample label and attached to the sleeve.

Building No. (B#) - Grid Coordinate (alpha numeric) - Sample Depth (feet)
e.g., B37-G17-4'

The grid coordinate system used in the naming of samples from Building 37 is presented in Figure 3.

Sample sleeves were placed in a cooler with blue ice and transported under chain-of-custody to a State-certified laboratory for analysis. Grid samples have been analyzed according to the analytical schedule presented in Table 1.

2.1.2 Hot Spot Sampling

Hot spot sampling was conducted at predetermined locations where former items of concern were located (e.g., pits, sumps), and at other locations where demolition activities revealed soil which may have been affected by petroleum hydrocarbons or other chemicals of concern.

Hot spot samples were collected by first exposing "fresh" soil beneath the surface using a stainless steel utensil or similar device. A PID was used to measure headspace organic vapor concentrations in the freshly exposed soil at each location. Soil samples were collected for analysis where at least one of the following conditions existed: 1) the headspace VOC reading exceeded 5 ppm, (2) areas where staining of the soil was visible, or (3) areas where odors were noticeable.

Soil samples were collected for analysis in pre-cleaned, stainless steel sleeves by driving the sleeve into the soil with a rubber mallet or drive sampler. The ends of the sleeves were then covered with Teflon film and secured with plastic end caps. A unique sample identification using the following nomenclature was written in indelible ink on a sample label and attached to the sleeve.

Building No. (B#) - Grab Sample (GS) - Chronological Number (#) - Sample Depth (feet)
e.g., B37-GS-42-3'

Sample sleeves were placed in a cooler with blue ice and transported under chain-of-custody to a State-certified laboratory for analysis. Hot spot samples have been analyzed according to the analytical schedule presented in Table 1.

Hot spot sample locations discussed in this report have been subsequently excavated and data collected from these samples are considered representative of the corresponding stockpile soil quality.

2.1.3 Stockpile Sampling

Excavated soil was placed in stockpiles each consisting of approximately 250 cubic yards of soil. Generally, stockpile samples were collected at a frequency of approximately one sample per stockpile. Stockpile samples were collected from the most noticeably affected soil within the stockpile. Samples were collected by using a shovel to cut vertically into the side of a stockpile at each sample location to expose "fresh" soil; samples were then collected from the exposed vertical wall and headspace VOC concentrations were measured using the PID.

Soil samples were collected for analysis in pre-cleaned, stainless steel sleeves by driving the sleeve into the soil with a rubber mallet or drive sampler. The ends of the sleeves were then covered with Teflon film and secured with plastic end caps. A unique sample identification using the following nomenclature was written in indelible ink on a sample label and attached to the sleeve.

Building No.(B#) - Remedial Excavation No.(RE#) - Stockpile Chronological Number (SP#)
e.g., B37-RE4-SP38

Sample sleeves were placed in a cooler with blue ice and transported under chain-of-custody to a State-certified laboratory for analysis.

Stockpile samples have been analyzed according to the analytical schedule presented in Table 1.

2.1.4 Confirmation Sampling

Confirmation sampling was conducted to ensure that residual surface soil (upper 12 feet) met soil screening criteria at each excavation. Confirmation sampling was conducted at a frequency of at least one sample location each 20 feet along the walls and floor of each excavation.

Soil removal continued at a particular location until the following conditions were met: 1) the headspace VOC reading in freshly exposed soil was less than or equal to 5 ppm, and soil staining was not visible, and odors were not noticeable, or 2) the maximum excavation depth of 12 feet had been reached. A confirmation sample was collected when these conditions were met. Iterations of additional soil excavation were conducted as required until confirmation sample analytical data indicated that *in situ* soil quality met the cleanup criteria established in Section 3.1 of this report. As a result, some confirmation sample locations may have been excavated and data collected from those samples were considered representative of the corresponding stockpile soil quality.

Confirmation soil samples were collected by first exposing "fresh" soil beneath the surface of a wall and floor of an excavation using a stainless steel utensil or similar device. Soil samples were collected for analysis in pre-cleaned, stainless steel sleeves by driving the sleeve into the soil with a rubber mallet or drive sampler. The ends of the sleeves were then covered with Teflon film and secured with plastic end caps. A unique sample identification using the following nomenclature was written in indelible ink on a sample label and attached to the sleeve.

Building No. (B#) - Grab Sample (GS) - Chronological Number (#) - Sample Depth (feet)
e.g., B37-GS-42-3'

Sample sleeves were placed in a cooler with blue ice and transported under chain-of-custody to a State-certified laboratory for analysis. Confirmation samples have been analyzed according to the analytical schedule presented in Table 1; however, some confirmation sample analyses were limited to target-specific chemicals once such analytes were identified either through previous sampling activities or historical site knowledge.

2.2 SOIL EXCAVATION

Remedial excavation to remove affected soil was conducted when one of the following conditions was discovered: (1) elevated PID readings greater than 5 ppm in grid or hot spot samples, (2) visible staining, and (3) noticeable odors. A conservative approach was employed such that soil which exhibited any of these characteristics was excavated and stockpiled.

Remedial excavations were performed using heavy equipment (excavators, front-end loaders, end-dump trucks) associated with the building demolition effort. Air monitoring in accordance with South Coast Air Quality Management District Rule 1166 was conducted throughout remedial excavation activities.

The maximum depth of any excavation was approximately 12 feet below grade. Excavated soil was segregated based on the location from where it was removed. Soil stockpiles were placed on asphalt or plastic sheeting, and covered with plastic sheeting to protect the soil from the elements. The locations of each stockpile are presented in Figure 4 through Figure 6.

2.3 STOCKPILE SOIL QUALITY

2.3.1 B37-RE-4 Stockpiles AM through AP

Initial soil removal at remedial excavation B37-RE-4 began in March 1997 as previously reported by Montgomery Watson (1997(e,f)). Additional soil removal at remedial excavation B37-RE-4 was conducted based on elevated PID readings, visual observations, or noticeable odors and was terminated on June 25, 1997.

STOCKPILE AM

Approximately 70 cubic yards of stockpiled soil associated with this additional excavation was removed with an excavator, transported and stockpiled west of the footprint of Building 61 (Stockpile AM) as shown in Figure 4.

The following types of samples have been collected and analyzed to evaluate the soil quality in B37-RE-4 Stockpile AM:

- Stockpile sample only

One stockpile sample was collected from Stockpile AM at the location presented in Figure 4. The analytical data for this sample are summarized in Table 2.

STOCKPILES AN, AO, AND AP

Confirmation samples collected during remedial excavation B37-RE-4 indicated that elevated concentrations of arsenic, SVOCs, and lead were present in shallow soil adjacent to the east of Building 37 within the Gravel Yard. Due to these elevated concentrations, additional soil was excavated from the discrete areas where these elevated concentrations were detected in the confirmation samples.

The excavated soils were stockpiled separately within the Building 37 footprint as follows:

Stockpile AN	approximately 50 cubic yards of arsenic-affected soil
Stockpile AO	approximately 30 cubic yards of SVOC-affected soil
Stockpile AP	approximately 6 cubic yards of lead-affected soil

The locations of these stockpiles are presented in Figure 5.

The following types of samples have been collected and analyzed to evaluate the soil quality in B37-RE-4 Stockpiles AN, AO, and AP:

- Confirmation samples
- Stockpile samples

One stockpile sample was collected from Stockpile AN, one stockpile sample was collected from Stockpile AO, and one stockpile sample was collected from Stockpile AP. The locations of these samples are presented in Figure 5.

Analytical data from confirmation and stockpile samples which are representative of stockpile soil quality are presented in the following tables:

Stockpile AN:	Table 3 (confirmation samples) Table 4 (stockpile sample)
Stockpile AO:	Table 5 (confirmation sample) Table 6 (stockpile sample)
Stockpile AP:	Table 7 (confirmation sample) Table 8 (stockpile sample)

A complete set of laboratory analytical reports is presented in Appendix A-1.

2.3.2 B37-RE-5 Stockpiles A through D

Due to elevated PID readings, visual observations, or noticeable odor, remedial excavation B37-RE-5 was conducted from April 24, 1997 through May 12, 1997. Approximately 1085 cubic yards of soil associated with this excavation was removed with an excavator,

transported and stockpiled west of the footprint of Building 61 (Stockpiles A through D) as presented in Figure 6.

The following types of samples have been collected and analyzed to evaluate the soil quality in B37-RE-5 Stockpiles A through D:

- Hot spot sample
- Stockpile samples

One hot spot sample was collected at the location presented in Figure 7 and later excavated. Analytical data for this hot spot sample are summarized in Table 9. Four stockpile samples were collected from the stockpiled soil at locations presented in Figure 6. Analytical data for the stockpile samples are summarized in Table 10. A complete set of laboratory analytical reports is presented in Appendix A-2.

SECTION 3.0

DATA SUMMARY AND CONCLUSIONS

This section presents soil screening criteria and the methodology used throughout the project for the identification of soils that are suitable for use as backfill. In addition, this section summarizes the analytical data associated with each stockpile discussed in this report and uses the aforementioned methodology to evaluate whether the soil stockpiles are suitable for use as backfill, or require treatment and/or off-site disposal.

3.1 BACKFILL SOIL SCREENING METHODOLOGY

The backfill soil screening criteria have been developed to satisfy two primary objectives: (1) residual concentrations in backfill materials must be below levels projected to impact underlying drinking water sources, and (2) residual concentration in backfill materials must be below levels projected to potentially impact human health under future construction and commercial/industrial activities at the Site.

In accordance with these objectives, individual remediation goals were developed for both drinking water and human health protection. The development of each of these remediation goals is discussed below followed by a summary of how these values will be implemented in the evaluation of soil suitability for backfill purposes.

Drinking Water

The generalized hydrostratigraphic succession at the Site is as follows (Kennedy/Jenks, 1996(b); Dames & Moore, 1993; Department of Water Resources, 1961):

SURFACE
Bellflower Aquitard
Gage Aquifer
El Segundo Aquitard
Lynwood Aquifer

Depth to groundwater at the Site is approximately 65 feet. Hydrostratigraphic information from voluminous data collected at the neighboring Del Amo and Montrose Chemical Superfund Sites can be correlated with subsurface information collected at the Site. Hydrostratigraphic correlations suggest that the shallowest groundwater at the Site occurs in the Bellflower Aquitard, which is not recognized as a drinking water source in the region (Dames & Moore, 1993).

Although the depth to the top of the Gage Aquifer should vary from approximately 120 to 150 feet (from west to east) across the Site, the Gage Aquifer is not utilized as a source of drinking water in the region (Dames & Moore, 1993). Consequently, the shallowest drinking water resource in the region would therefore be the Lynwood Aquifer, projected to occur at the depths of approximately 210 to 240 feet (from west to east) across the Site.

Based on the depth to the first drinking water source, the following permissible concentrations to 12 feet below ground surface have been approved by the RWQCB:

Analytes	Permissible Level
TRPH	
C4 - C12	2,000 mg/kg
C13 - C22	10,000 mg/kg
C22+	50,000 mg/kg
Metals	TTLC and STLC

Notes:
TTLC: Total Threshold Limit Concentration per CCR Title 22.
STLC: Soluble Threshold Limit Concentration per CCR Title 22.

Human Health

Site-specific health-based remediation goals (HBRGs) were developed by Integrated Environmental Services, Inc. using standard United States Environmental Protection Agency (USEPA) and California Environmental Protection Agency (Cal/EPA) methodologies. HBRGs were derived assuming future commercial industrial land use with an interim construction phase. Each HBRG will be used as a predictor of the risk posed by individual VOC, SVOC, PCB, and metal contaminants in soil. The additive effects of multiple contaminants have been accounted for by setting conservative target risk levels at $1x10^{-6}$ for carcinogens and 0.2 for toxicants. The final cumulative risks for all residual contaminants at the Site will be addressed in the post-remedial risk assessment. Table 11 summarizes the HBRGs to be used at the Site. A more detailed discussion of the methodologies used to derive these values has been presented in the *Health-Based Remediation Goals for Surface Soils* document (IESI, 1997(b)).

Evaluation Process

All soil excavated at the Site will undergo the soil screening evaluation process depicted in Figure 8. This evaluation process incorporates both drinking water and human health-based criteria. Soils that fail any portion of this test will be subjected to treatment prior to use as backfill or disposed of off-site. Once soils have passed all aspects of the evaluation procedure, they should be made readily available for use as backfill.

Additionally, metal concentration(s) in stockpiled soils were used to further characterize the waste soil as follows:

Stockpiled soils were classified as non-RCRA hazardous waste if representative soil samples contained any metal in total concentration equal to or greater than its respective TTLC per CCR Title 22. Representative soil samples were analyzed for soluble metal concentration using the Waste Extraction Test (WET) if the total concentration of any metal was equal to or greater than 10 times its respective STLC but less than its TTLC per CCR Title 22. Stockpiled soil was classified as non-RCRA hazardous waste if representative soil samples contained any metal in soluble concentration using the WET equal to or greater than its respective STLC per CCR Title 22. Additionally, representative soil samples which were analyzed using the WET were also analyzed for soluble metal concentrations using the Toxic Characteristic Leaching Procedure (TCLP). Stockpiled soil was classified as a RCRA characteristic hazardous waste if the soluble concentration of any metal was equal to or greater than the toxicity characteristic (TC) per CCR Title 22.

3.2 STOCKPILE EVALUATIONS

Chemicals of concern at the Site can be summarized as follows:

- Petroleum hydrocarbons
- VOCs
- SVOCs
- PCBs
- Metals

The sampling and analysis program for remedial excavations conducted within Building 37 and the Gravel Yard was conservatively focused on these chemicals of concern by implementing the following analytical schedule:

- All samples were analyzed for TRPH and metals.
- All samples which contained TRPH in concentration greater than 10,000 mg/kg were subsequently analyzed for carbon chain length.
- All grid samples were additionally analyzed for VOCs and SVOCs.
- All stockpile samples were additionally analyzed for VOCs and SVOCs.
- Stockpile samples were additionally analyzed for PCBs at a frequency of one sample per remedial excavation.

- For hot spot samples, TRPH was used as an initial screen to determine which samples would be analyzed for VOCs and SVOCs; only that sample with highest TRPH collected from a particular hot spot area was analyzed for VOCs and SVOCs.

3.2.1 B37-RE-4 Stockpiles AM through AP

STOCKPILE AM

Analytical data for the one soil sample (stockpile sample B37-RE4-SP53) associated with B37-RE-4 Stockpile AM are presented in Table 2. These data are summarized and evaluated below.

Petroleum hydrocarbons: Stockpile sample B37-RE4-SP53 contained TRPH in concentration of 57 mg/kg. This concentration is below the 10,000 mg/kg threshold concentration and therefore TRPH was not speciated.

VOCs: VOCs were not detected.

SVOCs: All SVOC concentrations detected were below HBRGs.

PCBs: PCB analysis was not conducted on the sample collected from B37-RE-4 Stockpile AM; however, PCB analysis was performed on one stockpile confirmation sample collected from the initial B37-RE-4 stockpiled soil and 0.057 mg/kg was detected (Montgomery Watson, 1997(e)). The reported concentration was more than an order of magnitude below the HBRG for Aroclor 1254 of 0.870 mg/kg.

Metals: All concentrations were below their respective TTLC, 10 times STLC, and HBRG.

Conclusion: The data suggest that B37-RE-4 Stockpile AM soil meets the soil screening criteria established in Section 3.1 of this report. Approval to use this stockpiled soil for backfill at the Site is requested.

STOCKPILE AN

Analytical data associated with soil in B37-RE-4 Stockpile AN are presented in Table 3 and Table 4. These data are summarized and evaluated below.

Petroleum hydrocarbons: Stockpile sample B37-RE4-SP54 contained the highest TRPH concentration (280 mg/kg). This concentration is below the 10,000 mg/kg threshold concentration and therefore TRPH was not speciated.

VOCs: VOCs were not detected.

SVOCs: All SVOC concentrations detected were below HBRGs.

PCBs: PCB analysis was not conducted. However, PCB analysis was performed on one stockpile confirmation sample collected from the initial B37-RE-4 stockpiled soil and 0.057 mg/kg was detected (Montgomery Watson, 1997(e)). The reported concentration was more than an order of magnitude below the HBRG for Aroclor 1254 of 0.870 mg/kg.

Metals: Arsenic exceeded the HBRG in samples confirmation samples B37-GS-178-1.5' and B37-GS-180-1.5'. The soluble concentration of arsenic in these samples met or exceeded the STLC (but did meet or exceed the TC for arsenic when analyzed using the TCLP). All other metal concentrations were below their respective TTLC, 10 times the STLC, and HBRG.

Conclusion The soluble concentration of arsenic exceeded the STLC. Consequently, Stockpile AN will be hauled off-site by a licensed hazardous waste hauler and properly disposed as a non-RCRA hazardous waste.

STOCKPILE AO

Analytical data associated with soil in B37-RE-4 Stockpile AO are presented in Table 5 and Table 6. These data are summarized and evaluated below.

Petroleum hydrocarbons: Stockpile sample B37-RE4-SP55 contained the highest TRPH concentration of (380 mg/kg). This concentration is below the 10,000 mg/kg threshold concentration and therefore TRPH was not speciated.

VOCs: VOCs were not detected.

SVOCs: The concentrations of benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluroanthene exceeded their respective HBRGs in sample confirmation sample B37-GS-165-1.5'. The concentration of benzo(a)pyrene exceeded the HBRG in stockpile sample B37-RE4-SP55.

PCBs: PCB analysis was not conducted. However, PCB analysis was performed on one stockpile confirmation sample collected from the initial B37-RE-4 stockpiled soil and 0.057 mg/kg was detected (Montgomery Watson, 1997(e)). The reported concentration was more than an order of magnitude below the HBRG for Aroclor 1254 of 0.870 mg/kg.

Metals: The total concentration of chromium in stockpile sample B37-RE4-SP55 exceeded 10 times the STLC. However, this sample did not meet or exceed the STLC when analyzed using the WET, or the TC when analyzed using the TCLP. All other metal concentrations were below their respective TTLC, 10 times STLC, and HBRG.

Conclusion: The concentrations of three SVOCs exceeded their respective HBRG. Consequently, Stockpile AO will be hauled off-site by a licensed waste hauler and properly disposed as non-hazardous waste.

STOCKPILE AP

Analytical data associated with soil in B37-RE-4 Stockpile AP are presented in Table 7 and Table 8. These data are summarized and evaluated below.

Petroleum hydrocarbons: TRPH were detected in sample B37-RE4-SP56 (100 mg/kg). This concentration is below the 10,000 mg/kg threshold concentration and therefore TRPH was not speciated.

VOCs: VOCs were not detected.

SVOCs: SVOCs were not detected.

PCBs: PCB analysis was not conducted. However, PCB analysis was performed on one stockpile confirmation sample collected from the initial B37-RE-4 stockpiled soil and 0.057 mg/kg was detected (Montgomery Watson, 1997(e)). The reported concentration was more than an order of magnitude below the HBRG for Aroclor 1254 of 0.870 mg/kg.

Metals: The concentration of arsenic exceeded the HBRG in stockpile sample B37-RE4-SP56. The soluble concentration of lead in confirmation sample B37-GS-180E-3' exceeded the STLC (but did not meet or exceed the TC for lead when analyzed using the TCLP). All other metal concentrations were below their respective TTLC, 10 times the STLC, and HBRG.

Conclusion:. The soluble concentration of lead exceeded the STLC. Consequently, Stockpile AP will be hauled off-site by a licensed hazardous waste hauler and properly disposed as a non-RCRA hazardous waste.

3.2.2 B37-RE-5 Stockpiles A through D

Analytical data for soil samples associated with B37-RE-5 Stockpiles A through D are presented in Table 9 and Table 10. These data are summarized and evaluated below.

Petroleum hydrocarbons: Stockpile sample B37-RE5-SP1 contained the highest TRPH concentration (240 mg/kg). This concentration is below the 10,000 mg/kg threshold concentration and therefore TRPH was not speciated.

VOCs: VOCs were not detected.

SVOCs: Chrysene was detected in stockpile sample B37-RE5-SP2. Bis(2-ethylhexyl)phthalate was detected in hot spot sample B37-GS-154-2.5'. Both compounds were detected in concentration below their respective HBRG.

PCBs: PCBs were detected in stockpile sample B37-RE5-SP1A in concentration of 0.710 mg/kg. The reported concentration is below the HBRG for Aroclor 1254 of 0.870 mg/kg.

Metals: All concentrations were below their respective TTLC, 10 times STLC, and HBRG.

Conclusion: The data suggest B37-RE-5 Stockpiles A through D soil meet the soil screening criteria established in Section 3.1 of this report. Approval to use this stockpiled soil for backfill at the Site is requested.

SECTION 4.0

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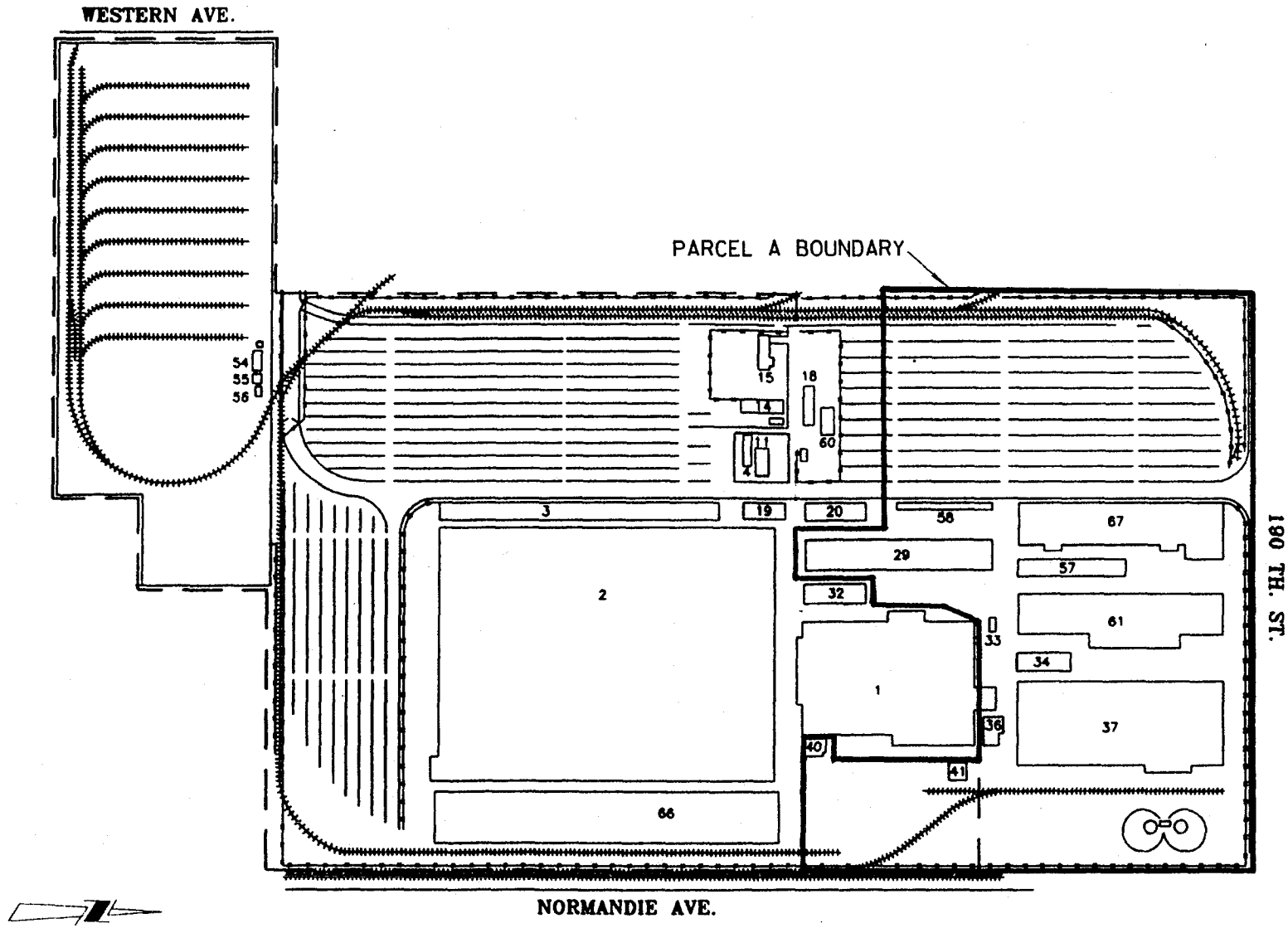
Figures

MONTGOMERY WATSON

C-6 FACILITY MAP

FIG. 1



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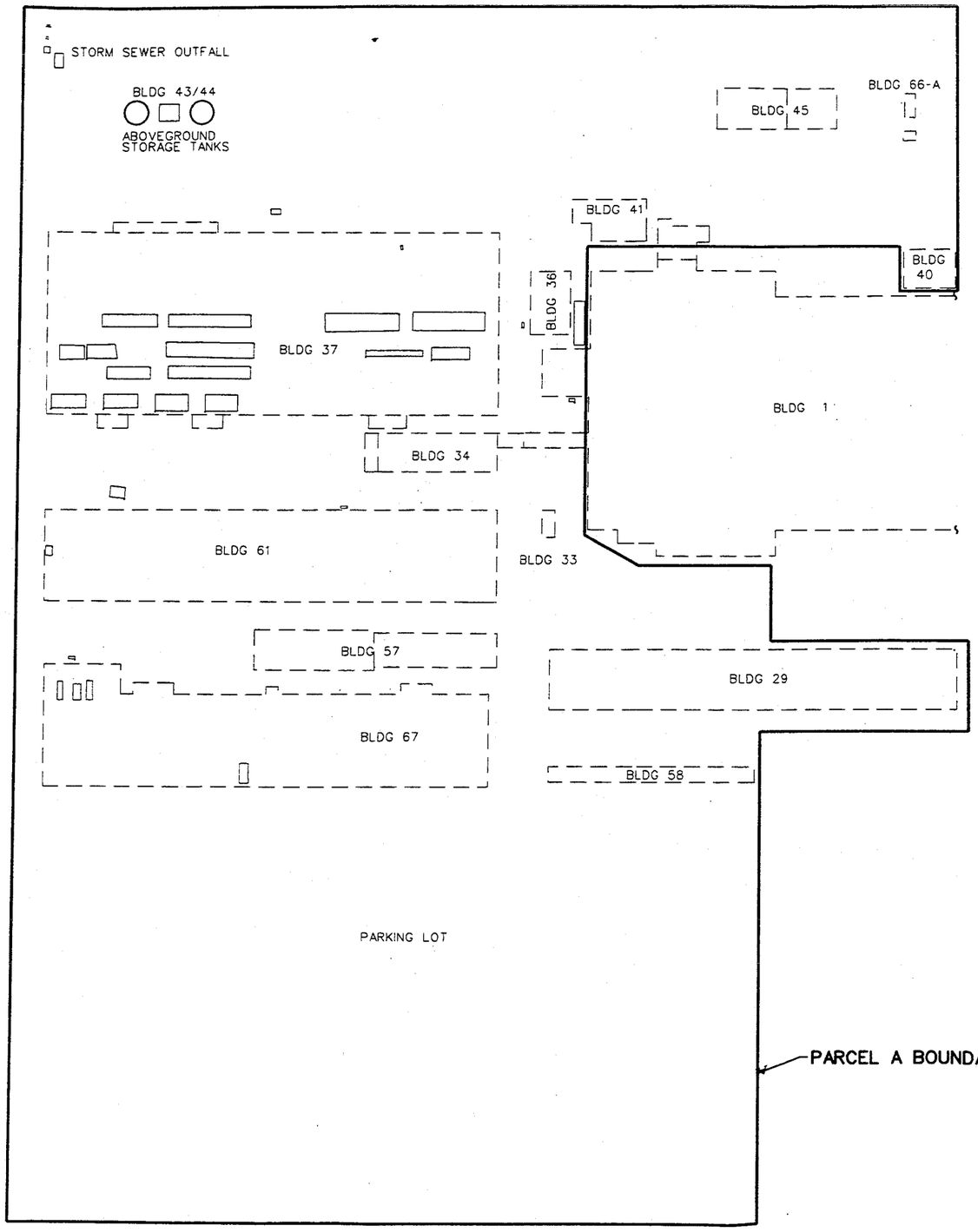
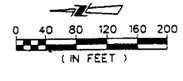
Approximate Scale: 1"=600'

Base map developed from Facility Layout and Subject Property Map by Kennedy/Jenks Consultants, May 1996.





BASE MAP DEVELOPED FROM TAIT & ASSOCIATES INC. SURVEY DRAWING DATED 10/22/96.

REV	DATE	BY	DESCRIPTION

SCALE: AS SHOWN

DESIGNED
DRAWN N. CHRAKIAN
CHECKED S. REINERS

SUBMITTED
PROJECT ENGINEER R. C. E. NO. DATE
RECOMMENDED
MONTGOMERY WATSON R. C. E. NO. DATE

MONTGOMERY WATSON
Pasadena, California

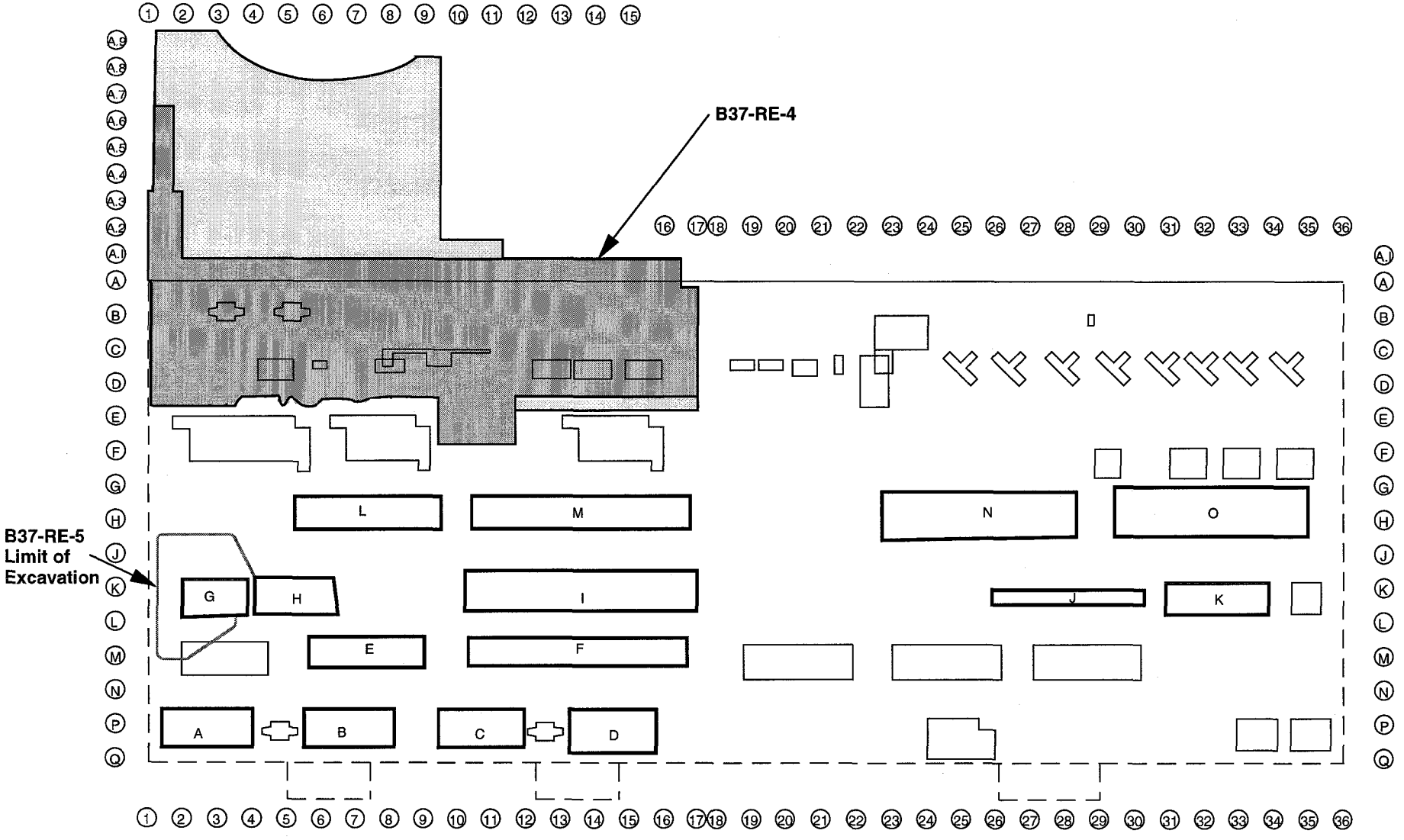
APPROVED DATE
APPROVED DATE

BOEING REALTY CORPORATION
PARCEL A
SITE MAP

SHEET FIG. 2 OF • SHEETS

JOB No. • FILE No. •

BOE-C6-0061435

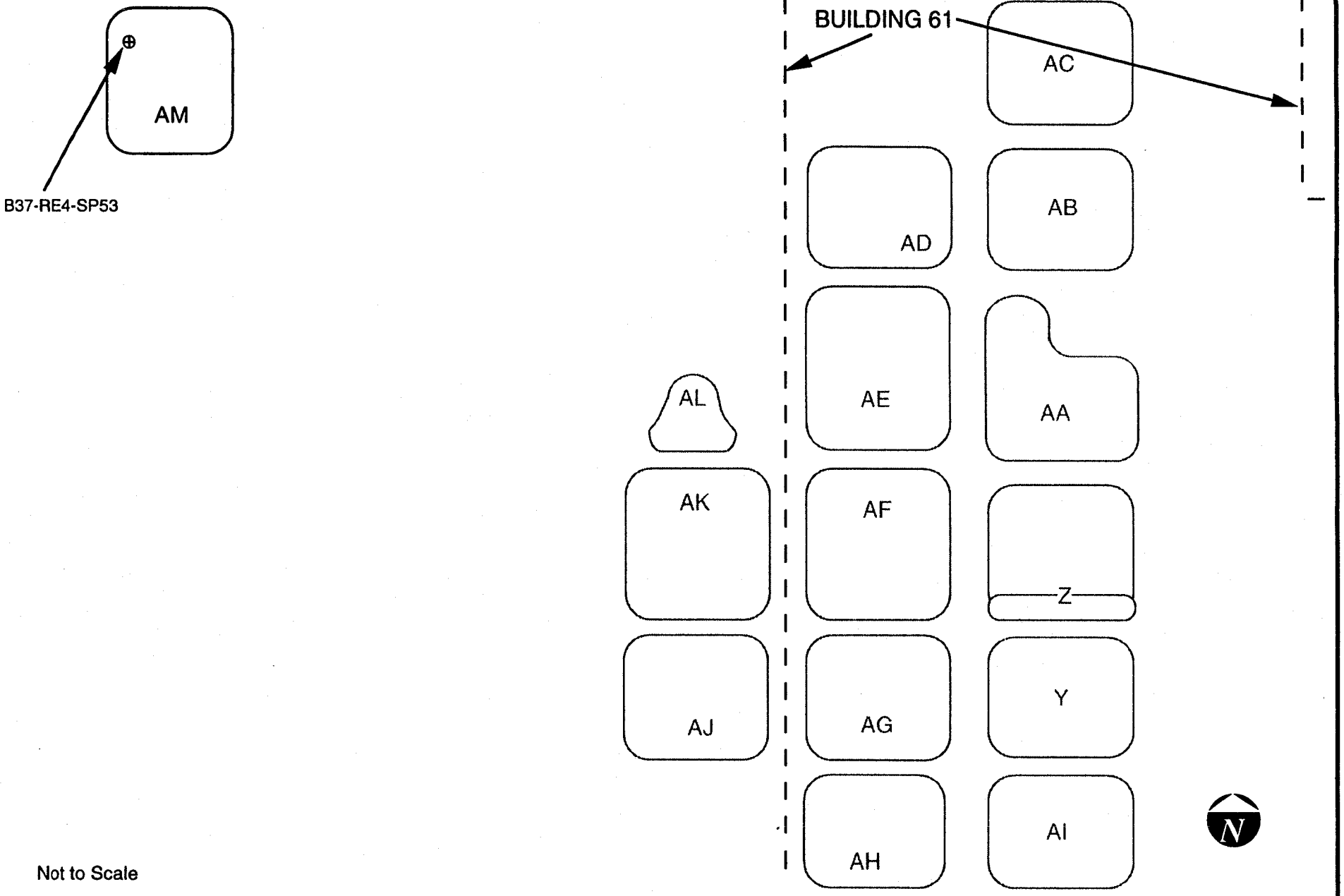


DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY - BUILDING 37

BUILDING 37 GRID OUTLINE AND LOCATIONS OF REMEDIAL EXCAVATIONS

FIGURE 3

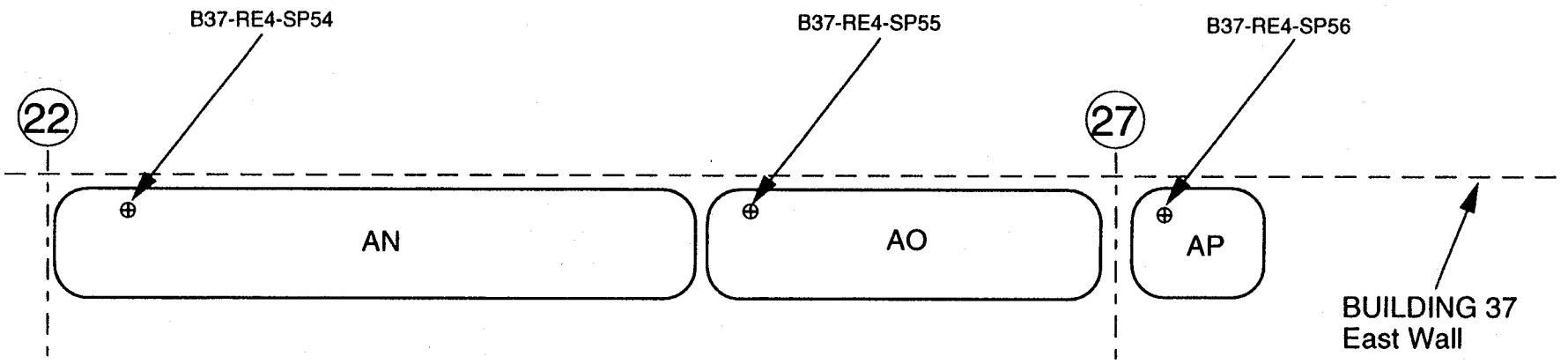
BOE-C6-0061436



DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY

Remedial Excavation B37-RE-4 Stockpile AM
Stockpile and Sample Location

FIGURE 4



0 5 10 20

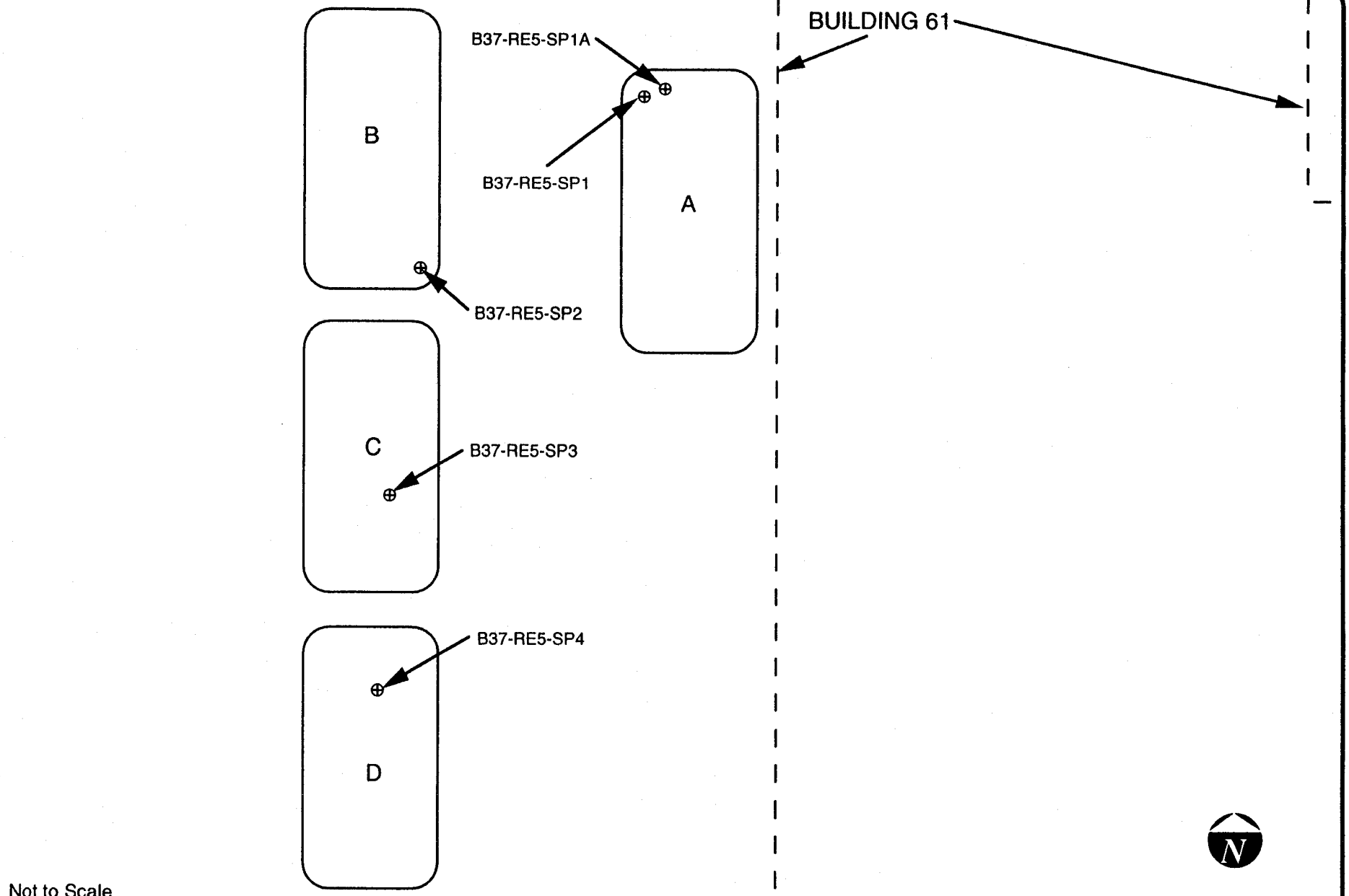
Scale
(1/16 inch = 1 feet)

DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY

Remedial Excavation B37-RE-4 Stockpiles AN, AO, and AP
Stockpiles and Sample Locations

FIGURE 5

BOE-C6-0061438

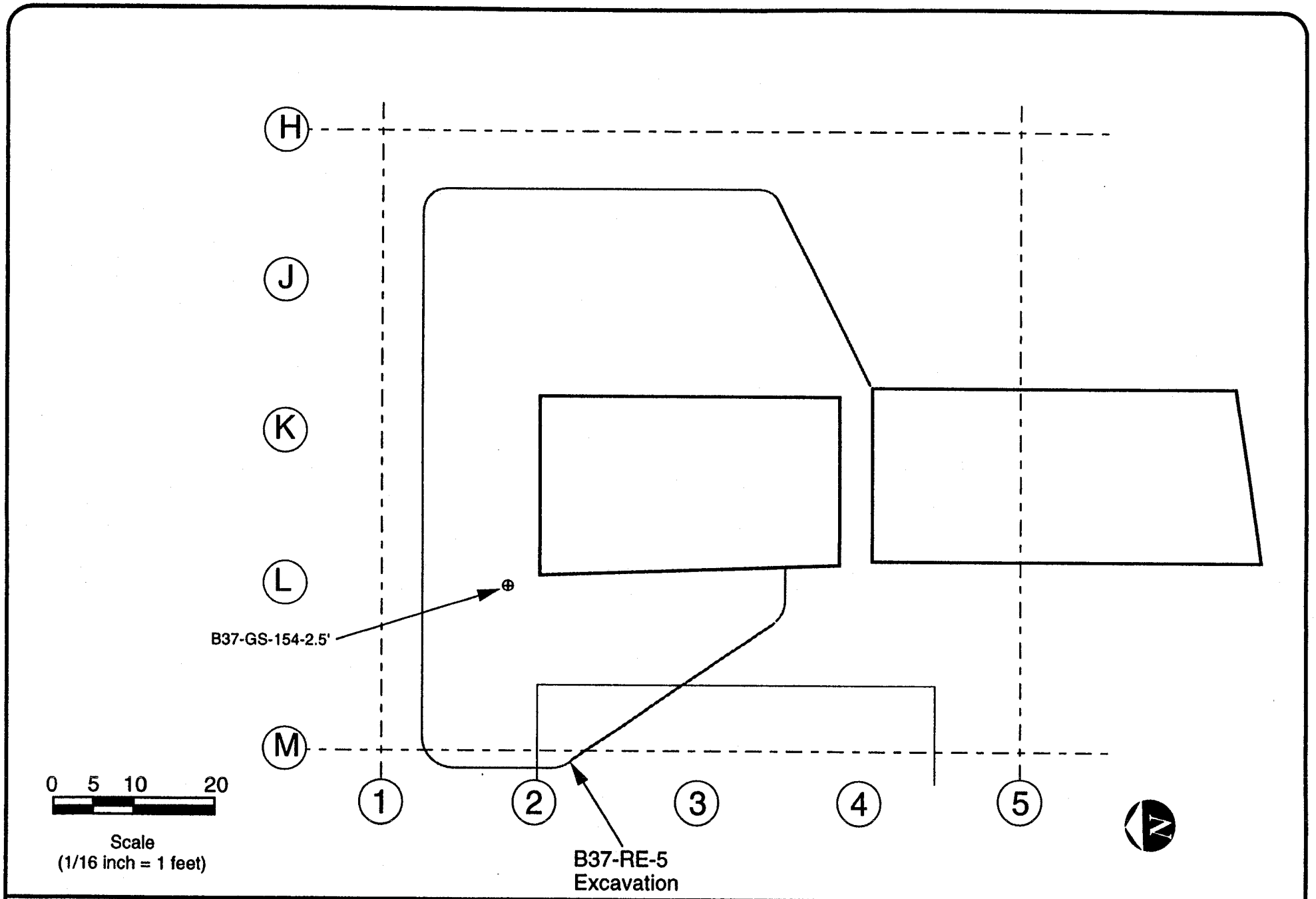


DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY

Remedial Excavation B37-RE-5 Stockpiles A through D
Stockpiles and Sample Locations

FIGURE 6

BOE-C6-0061439

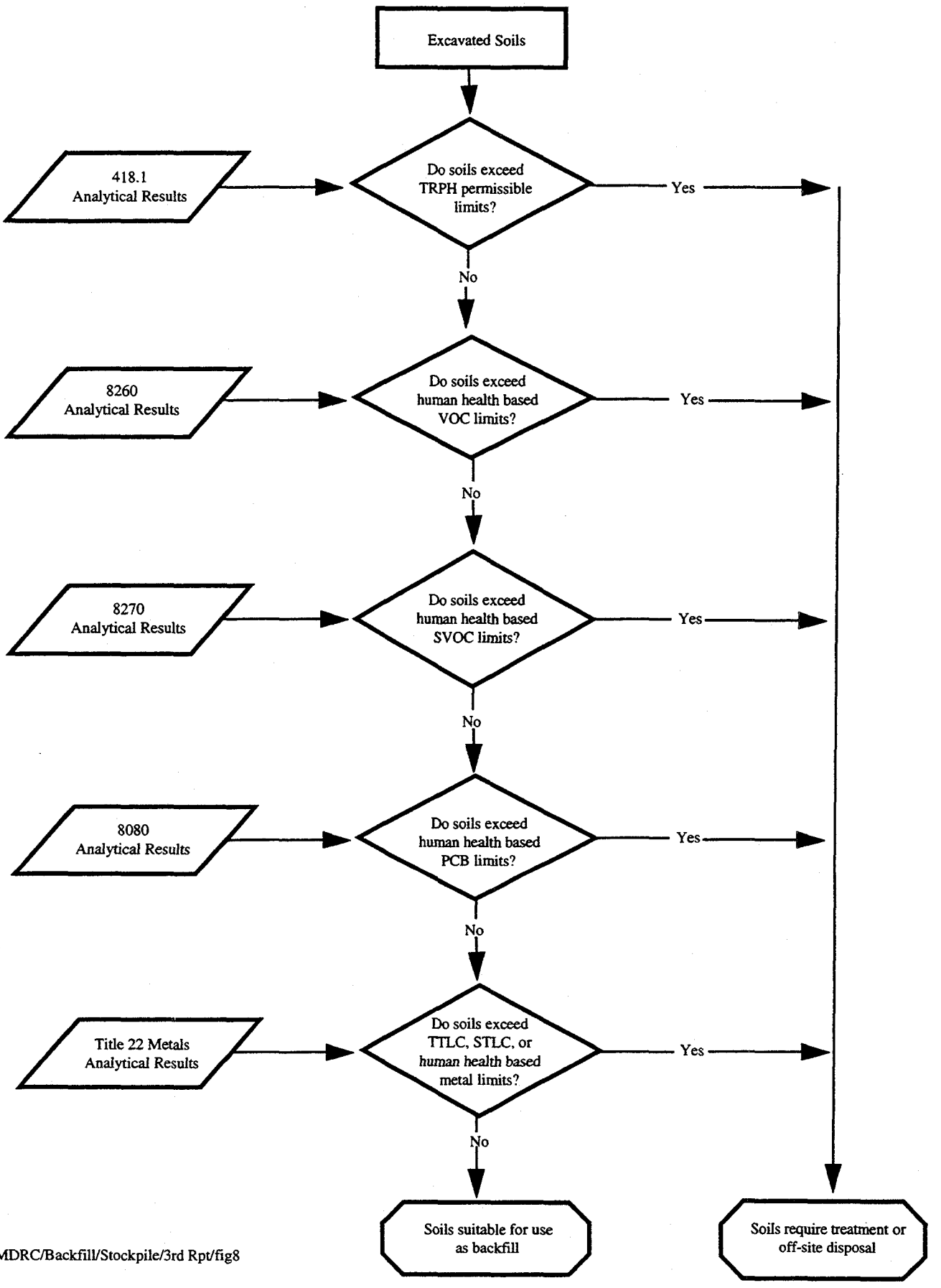


DOUGLAS AIRCRAFT COMPANY
C-6 FACILITY - BUILDING 37

Remedial Excavation B37-RE-5 Hot Spot Sample Location

FIGURE 7

FIGURE 8
Soil Screening Evaluation Process



g:/MDRC/Backfill/Stockpile/3rd Rpt/fig8

Tables

TABLE 1

Summary of Soil Sample Analytical Methods

Sample Type	EPA Method	Analyte
Grid Sample	418.1	TRPH (a)
	6000/7000	Metals
	8260	VOCs
	8270	SVOCs
Hot Spot Sample	418.1	TRPH (a)
	6000/7000	Metals
	8260	VOCs (b)
	8270	SVOCs (b)
Stockpile Sample	418.1	TRPH (a)
	6000/7000	Metals
	8260	VOCs
	8270	SVOCs
	8080	PCBs (c)
Confirmation Sample	418.1	TRPH (a)
	6000/7000	Metals
	8260	VOCs (d)
	8270	SVOCs (d)
	8080	PCBs (e)

Notes:
TRPH Total Recoverable Petroleum Hydrocarbons
VOCs Volatile Organic Compounds
SVOCs Semi-volatile Organic Compounds.
PCBs Polychlorinated Biphenyls
(a) Samples exhibiting TRPH concentration greater than 10,000 mg/kg were submitted for carbon chain analysis.
(b) Only the sample with highest TRPH concentration from a hot spot area was analyzed for VOCs and SVOCs.
(c) One sample per remedial excavation.
(d) The number of confirmation samples analyzed for VOCs and SVOCs is approximately equal to the number of stockpile samples analyzed for VOCs and SVOCs. Confirmation samples are selected for analysis of VOCs and SVOCs based on highest TRPH concentration, and location of evenly spaced confirmation sample locations.
(e) Generally, one sample per each remedial excavation, or following the removal of each 2500 cubic yards of soil, whichever is less.

TABLE 2
Analytical Data Summary
Remedial Excavation B37-RE-4 Stockpile AM Sample*

Analyte	EPA Method	Sample Number and Collection Date B37-RE4-SP53 5/9/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	57		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	96	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	29	2,500	5
Cobalt	6010	7.4	8,000	80
Copper	6010	15	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	10	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	28	2,400	24
Zinc	6010	51	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (1) (mg/kg)				
Chrysene	8270	0.110		
Fluoranthene	8270	0.130		
Pyrene	8270	0.100		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
ND = not detected
PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
(1) SVOCs not listed were not detected

* Refer to Figure 4 for sample location

TABLE 3
Analytical Data Summary
Remedial Excavation B37-RE-4 Confirmation Samples (Stockpile AN)

Analyte	EPA Method	Sample Number, Collection Date, Grid Location and Depth						Regulatory Levels	
		B37-GS-178-1.5' 5/1/97	B37-GS-178A-3' 5/22/97	B37-GS-178B-5' 5/22/97	B37-GS-180-1.5' 5/1/97	B37-GS-180A-3' 5/22/97	B37-GS-180B-5' 5/22/97	TTLC (mg/kg)	STLC (mg/L)
TRPH (mg/kg)	418.1	160	--	--	44	--	--		
Title 22 Metals (mg/kg)									
Antimony	6010	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	500	15
Arsenic	6010	110 (2)(3) #	<1.0	<1.0	50 (4)(5) #	<1.0	<1.0	500	5
Barium	6010	86	110	64	95	110	73	10,000	100
Beryllium	6010	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	75	0.75
Cadmium	6010	4.6	<0.1	<0.1	1.7	1.7	<0.1	100	1
Chromium (VI)	7196	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	500	5
Chromium (total)	6010	18	25	29	22	23	27	2,500	5
Cobalt	6010	8.3	7.2	7.7	7.2	7.7	6.3	8,000	80
Copper	6010	33	16	10	29	12	9.2	2,500	25
Lead (total)	6010	22	<1.0	<1.0	32	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3,500	350
Nickel	6010	8.9	8.6	7.0	10	11	7.8	2,000	20
Selenium	6010	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	100	1
Silver	6010	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	500	5
Thallium	6010	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	700	7
Vanadium	6010	23	27	31	22	24	31	2,400	24
Zinc	6010	51	54	46	57	38	48	5,000	250
VOCs (mg/kg)	8260	ND	--	--	--	--	--		
SVOCs (1) (mg/kg)									
Chrysene	8270	0.130	--	--	--	--	--		
Phenanthrene	8270	0.100	--	--	--	--	--		
Pyrene	8270	0.130	--	--	--	--	--		
Carbon Chain Range (mg/kg)	sim. dist.	--	--	--	--	--	--		
PCBs (mg/kg)	8080	--	--	--	--	--	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
bgs = below ground surface
ND = not detected
sim.dist. = simulated distillation
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
PCBs = Polychlorinated biphenyls

TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
TRPH = Total Recoverable Petroleum Hydrocarbons
(1) SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 11 mg/L.
(3) TCLP analysis performed on this sample. Result was <1.0 mg/L.
(4) Waste Extraction Test performed on this sample. Result was 5.0 mg/L.
(5) TCLP analysis performed on this sample. Result was 3.2 mg/L.
= Exceeds Screening Level

TABLE 4
Analytical Data Summary
Remedial Excavation B37-RE-4 Stockpile AN Sample*

Analyte	EPA Method	Sample Number and Collection Date B37-RE4-SP54 7/8/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	280		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	29	2,500	5
Cobalt	6010	7.9	8,000	80
Copper	6010	18	2,500	25
Lead (total)	6010	7.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	13	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	32	2,400	24
Zinc	6010	52	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (mg/kg)	8270	ND		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
ND = not detected
PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration

* Refer to Figure 5 for sample location

TABLE 5
Analytical Data Summary
Remedial Excavation B37-RE-4 Confirmation Sample (Stockpile AO)

Analyte	EPA Method	Sample Number and Collection Date B37-GS-165-1.5' 4/29/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	98		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	94	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	4.5	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	36	2,500	5
Cobalt	6010	6.5	8,000	80
Copper	6010	24	2,500	25
Lead (total)	6010	22	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	12	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	24	2,400	24
Zinc	6010	77	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	0.520		
Anthracene	8270	1.200		
Benzo (a) Anthracene	8270	14.000 #		
Benzo (b) Fluoranthene	8270	16.000 #		
Benzo (k) Fluoranthene	8270	6.900		
Benzo (a) Pyrene	8270	15.000 #		
Benzo (g,h,i) Perylene	8270	9.200		
Chrysene	8270	14.000		
Dibenz (a,h) Anthracene	8270	3.100		
Fluoranthene	8270	18.000		
Indeno (1,2,3-cd)Pyrene	8270	11.000		
2-Methylnaphthalene	8270	0.520		
Naphthalene	8270	0.600		
Phenanthrene	8270	5.900		
Pyrene	8270	9.800		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = micrograms per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
ND = not detected
# = Exceeds Screening Level

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
(1) SVOCs not listed were not detected
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration

TABLE 6
Analytical Data Summary
Remedial Excavation B37-RE-4 Stockpile AO Sample*

Analyte	EPA Method	Sample Number and Collection Date B37-RE4-SP55 7/8/97	Regulatory Levels TTLC (mg/kg)	Regulatory Levels STLC (mg/L)
TRPH (mg/kg)	418.1	380		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	120	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	7.0	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	61 (2)(3)	2,500	5
Cobalt	6010	8.6	8,000	80
Copper	6010	45	2,500	25
Lead (total)	6010	30	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	13	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	34	2,400	24
Zinc	6010	100	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (1) (mg/kg)				
Acenaphthene	8270	0.110		
Anthracene	8270	0.210		
Benzo(a)anthracene	8270	2.600		
Benzo(b)fluoranthene	8270	3.900		
Benzo(k)fluoranthene	8270	1.100		
Benzo(g,h,i)perylene	8270	2.200		
Benzo(a)pyrene	8270	2.900 #		
Chrysene	8270	2.900		
Dibenz(a,h)anthracene	8270	0.590		
Fluoranthene	8270	3.600		
Indeno(1,2,3-cd)pyrene	8270	2.400		
Phenanthrene	8270	0.870		
Pyrene	8270	3.400		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
ND = not detected
PCBs = Polychlorinated Biphenyls
# = Exceeds Screening Level

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
(1) SVOCs not listed were not detected
(2) Waste Extraction Test performed on this sample. Result was 0.91 mg/L.
(3) TCLP analysis performed on this sample. Result was <1.0 mg/L.

* Refer to Figure 5 for sample location

TABLE 7
Analytical Data Summary
Remedial Excavation B37-RE-4 Confirmation Sample (Stockpile AP)

Analyte	EPA Method	Sample Number and Collection Date B37-GS-180E-3' 6/6/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	--		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	32 #	500	5
Barium	6010	120	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	1.5	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	35	2,500	5
Cobalt	6010	7.1	8,000	80
Copper	6010	20	2,500	25
Lead (total)	6010	**430** (1)(2) #	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	14	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	35	2,400	24
Zinc	6010	120	5,000	250
VOCs (mg/kg)	8260	--		
SVOCs (mg/kg)	8270	--		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
VOCs = Volatile Organic Compounds
# = Exceeds Screening Level
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
(1) Waste Extraction Test performed on this sample. Result was 14 mg/L.
(2) TCLP analysis performed on this sample. Result was <1.0 mg/L.

TABLE 8
Analytical Data Summary
Remedial Excavation B37-RE-4 Stockpile AP Sample*

Analyte	EPA Method	Sample Number and Collection Date B37-RE4-SP56 7/8/97	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	100		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	23 #	500	5
Barium	6010	110	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	1.4	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	33	2,500	5
Cobalt	6010	8.1	8,000	80
Copper	6010	18	2,500	25
Lead (total)	6010	6.6	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	12	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	31	2,400	24
Zinc	6010	62	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (mg/kg)	8270	ND		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation
ND = not detected
PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
# = Exceeds Screening Level

* Refer to Figure 5 for sample location

TABLE 9
Analytical Data Summary
Remedial Excavation B37-RE-5 Hot Spot Sample

Analyte	EPA Method	Sample Number, Collection Date, Grid Location and Depth B37-GS-154-2.5' 4/25/97 L/M-1.5 @ 2.5' bgs*	Regulatory Levels TTLC (mg/kg)	 STLC (mg/L)
TRPH (mg/kg)	418.1	270		
Title 22 Metals (mg/kg)				
Antimony	6010	<5.0	500	15
Arsenic	6010	<1.0	500	5
Barium	6010	94	10,000	100
Beryllium	6010	<0.1	75	0.75
Cadmium	6010	<0.1	100	1
Chromium (VI)	7196	<0.5	500	5
Chromium (total)	6010	21	2,500	5
Cobalt	6010	6.5	8,000	80
Copper	6010	10	2,500	25
Lead (total)	6010	<1.0	1,000	5
Mercury	7471	<0.01	20	0.2
Molybdenum	6010	<0.5	3,500	350
Nickel	6010	8.4	2,000	20
Selenium	6010	<1.0	100	1
Silver	6010	<0.1	500	5
Thallium	6010	<5.0	700	7
Vanadium	6010	26	2,400	24
Zinc	6010	36	5,000	250
VOCs (mg/kg)	8260	ND		
SVOCs (1) (mg/kg)				
bis (2-Ethylhexyl)Phthalate	8270	0.120		
Carbon Chain Range (mg/kg)	sim. dist.	--		
PCBs (mg/kg)	8080	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
bgs = below ground surface
ND = not detected

* Refer to Figure 7 for sample location

sim.dist. = simulated distillation
VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
PCBs = Polychlorinated biphenyls
(1) SVOCs not listed were not detected
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration
TRPH = Total Recoverable Petroleum Hydrocarbons

TABLE 10
Analytical Data Summary
Remedial Excavation B37-RE-5 Stockpile Samples*

Analyte	EPA Method	Sample Number and Collection Date					Regulatory Levels	
		B37-RE5-SP1 4/25/97	B37-RE5-SP1A 6/19/97	B37-RE5-SP2 5/6/97	B37-RE5-SP3 5/12/97	B37-RE5-SP4 5/12/97	TTLC (mg/kg)	STLC (mg/L)
TRPH (mg/kg)	418.1	240	--	200	27	<8.0		
Title 22 Metals (mg/kg)								
Antimony	6010	<5.0	--	<5.0	<5.0	<5.0	500	15
Arsenic	6010	<1.0	--	<1.0	<1.0	<1.0	500	5
Barium	6010	120	--	130	97	110	10,000	100
Beryllium	6010	<0.1	--	<0.1	<0.1	<0.1	75	0.75
Cadmium	6010	<0.1	--	<0.1	<0.1	<0.1	100	1
Chromium (VI)	7196	<0.5	--	<0.5	<0.5	<0.5	500	5
Chromium (total)	6010	21	--	20	20	21	2,500	5
Cobalt	6010	7.8	--	7.5	7.2	7.9	8,000	80
Copper	6010	12	--	14	12	13	2,500	25
Lead (total)	6010	<1.0	--	<1.0	<1.0	<1.0	1,000	5
Mercury	7471	<0.01	--	<0.01	<0.01	<0.01	20	0.2
Molybdenum	6010	<0.5	--	<0.5	<0.5	<0.5	3,500	350
Nickel	6010	10	--	11	11	10	2,000	20
Selenium	6010	<1.0	--	<1.0	<1.0	<1.0	100	1
Silver	6010	<0.1	--	<0.1	<0.1	<0.1	500	5
Thallium	6010	<5.0	--	<5.0	<5.0	<5.0	700	7
Vanadium	6010	24	--	27	26	29	2,400	24
Zinc	6010	40	--	41	43	40	5,000	250
VOCs (mg/kg)	8260	ND	--	ND	ND	ND		
SVOCs (1) (mg/kg)								
Chrysene	8270	<0.100	--	0.160	<0.100	<0.100		
Carbon Chain Range (mg/kg)	sim. dist.	--	--	--	--	--		
PCBs (1) (mg/kg)								
PCB-1242	8080	--	0.710	--	--	--		

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
-- = not analyzed
sim.dist. = simulated distillation

VOCs = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
TRPH = Total Recoverable Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls

(1) SVOCs and PCBs not listed were not detected
TTLC = California Total Threshold Limit Concentration
STLC = California Soluble Threshold Limit Concentration

* Refer to Figure 6 for sample locations

TABLE 11
Health-Based Remediation Goals (HBRGs) for
Organic Constituents Soil Exposure Pathways (mg/kg)
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Constituent	Construction Worker Initial HBRG	Commercial/ Industrial User Initial HBRG	Final HBRG
1-butanol	1.98E+04	3.46E+04	1.98E+04
1,1-dichloroethane	2.23E+03	1.10E+03	1.10E+03
1,1-dichloroethene	1.57E+01	4.21E+00	4.21E+00
1,1,1,2-tetrachloroethane	4.98E+02	1.44E+04	4.98E+02
1,1,2-trichloroethane	2.23E+02	1.26E+03	2.23E+02
1,1,2,2-tetrachloroethane	6.25E+01	1.50E+03	6.25E+01
1,2-dibromo-3-chloropropane	2.42E+00	7.47E+01	2.42E+00
1,2-dibromoethane	4.86E+00	1.84E+02	4.86E+00
1,2-dichlorobenzene	NA	2.64E+06	2.64E+06
1,2-dichloroethane	2.06E+02	2.66E+02	2.06E+02
1,2-dichloropropane	3.37E+01	7.25E+00	7.25E+00
1,2-diphenylhydrazine	2.03E+01	2.36E+08	2.03E+01
1,2,3-trichloropropane	2.39E+00	4.08E+01	2.39E+00
1,2,4-trichlorobenzene	1.74E+02	4.74E+07	1.74E+02
1,3-dichloropropene	4.83E+01	6.63E+02	4.83E+01
1,4-dichlorobenzene	4.32E+02	4.37E+04	4.32E+02
2-butanone	3.28E+04	2.35E+06	3.28E+04
2-chlorophenol	8.57E+02	1.17E+06	8.57E+02
2-methylphenol	8.66E+03	7.59E+07	8.66E+03
2-naphthylamine	9.81E+00	1.63E+06	9.81E+00
2,4-dichlorophenol	5.21E+01	2.22E+07	5.21E+01
2,4-dimethylphenol	3.48E+03	4.37E+08	3.48E+03
2,4-dinitrophenol	3.49E+01	7.14E+09	3.49E+01
2,4-dinitrotoluene	3.48E+01	7.62E+06	3.48E+01
2,4,5-trichlorophenol	1.73E+04	2.21E+08	1.73E+04
2,4,6-trichlorophenol	2.52E+02	1.10E+07	2.52E+02
2,6-dinitrotoluene	2.59E+01	4.51E+05	2.59E+01
3,3-dichlorobenzidine	1.47E+01	7.53E+08	1.47E+01
4-chloroaniline	6.93E+01	6.50E+06	6.93E+01
4-methyl-2-pentanone	1.20E+04	6.84E+05	1.20E+04
4-methylphenol	8.69E+01	4.01E+07	8.69E+01
4,4-ddd	1.03E+02	9.97E+08	1.03E+02
4,4-dde	7.28E+01	2.83E+06	7.28E+01
4,4-ddt	1.22E+01	2.26E+08	1.22E+01
acenaphthene	8.10E+03	1.62E+08	8.10E+03
acetone	1.55E+04	4.37E+05	1.55E+04
acrolein	NA	8.05E+01	8.05E+01
acrylonitrile	1.59E+01	7.65E+01	1.59E+01

TABLE 11
Health-Based Remediation Goals (HBRGs) for
Organic Constituents Soil Exposure Pathways (mg/kg)

Constituent	Construction Worker Initial HBRG	Commercial/ Industrial User Initial HBRG	Final HBRG
aldrin	7.32E-01	2.82E+04	7.32E-01
alpha-bhc	3.93E+00	2.32E+05	3.93E+00
aniline	3.10E+03	1.02E+07	3.10E+03
anthracene	4.06E+03	1.37E+10	4.06E+03
aroclor 1016	NA	7.35E+05	7.35E+05
aroclor 1254	8.70E-01	5.69E+05	8.70E-01
benzene	1.43E+02	1.71E+02	1.43E+02
benzidine	3.52E-02	1.55E+02	3.52E-02
benzoic acid	6.96E+04	6.58E+10	6.96E+04
benzo(a)anthracene	1.14E+01	1.13E+09	1.14E+01
benzo(a)pyrene	1.14E+00	9.56E+07	1.14E+00
benzo(b)fluoranthene	1.14E+01	3.19E+08	1.14E+01
benzo(k)fluoranthene	1.14E+01	9.56E+07	1.14E+01
benzyl alcohol	1.73E+04	3.81E+08	1.73E+04
benzyl chloride	1.00E+02	4.03E+03	1.00E+02
beta-bhc	1.38E+01	9.94E+06	1.38E+01
beta-chloronaphthalene	NA	2.32E+07	2.32E+07
bis(2-chloro-1-methylethyl)ether	2.49E+02	2.93E+04	2.49E+02
bis(2-chloroethyl)ether	6.91E+00	6.91E+02	6.91E+00
bis(2-ethylhexyl)phthalate	2.10E+03	3.59E+09	2.10E+03
bromodichloromethane	1.30E+02	2.94E+03	1.30E+02
bromoform	3.34E+02	1.28E+05	3.34E+02
bromomethane	NA	1.15E+02	1.15E+02
carbazole	8.83E+02	6.66E+08	8.83E+02
carbon disulfide	1.43E+03	7.04E+04	1.43E+03
carbon tetrachloride	9.71E+01	1.35E+02	9.71E+01
chlordane	1.04E+00	1.55E+05	1.04E+00
chlorobenzene	NA	2.83E+04	2.83E+04
chloroform	1.49E+02	9.58E+02	1.49E+02
chloromethane	7.43E+02	7.40E+01	7.40E+01
chrysene	1.14E+02	5.06E+10	1.14E+02
cis-1,2-dichloroethene	1.34E+03	7.51E+03	1.34E+03
cumene	3.79E+03	5.73E+04	3.79E+03
dibenzo(a,h)anthracene	3.35E+00	6.34E+11	3.35E+00
dibromochloromethane	1.50E+02	1.54E+02	1.50E+02
dichlorodifluoromethane	2.14E+03	7.01E+02	7.01E+02
dieldrin	1.22E+00	2.33E+04	1.22E+00
diethyl phthalate	1.39E+05	6.03E+09	1.39E+05
di-n-butylphthalate	1.74E+04	4.19E+08	1.74E+04

TABLE 11
Health-Based Remediation Goals (HBRGs) for
Organic Constituents Soil Exposure Pathways (mg/kg)
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Constituent	Construction Worker Initial HBRG	Commercial/ Industrial User Initial HBRG	Final HBRG
di-n-octylphthalate	3.49E+02	1.80E+10	3.49E+02
endosulfan	1.46E+02	2.14E+08	1.46E+02
endrin	7.33E+00	1.37E+08	7.33E+00
ethyl chloride	1.42E+05	1.57E+06	1.42E+05
ethylbenzene	NA	7.33E+05	7.33E+05
fluoranthene	6.97E+03	3.03E+10	6.97E+03
fluorene	6.94E+03	1.40E+08	6.94E+03
gamma-bhc	2.32E+01	2.63E+05	2.32E+01
heptachlor	2.87E+00	1.78E+03	2.87E+00
heptachlor epoxide	3.14E-01	1.35E+03	3.14E-01
hexachlorobenzene	9.69E+00	2.80E+03	9.69E+00
hexachlorobutadiene	2.24E+02	7.13E+04	2.24E+02
hexachlorocyclopentadiene	8.87E+01	9.79E+02	8.87E+01
hexachloroethane	1.73E+02	2.39E+05	1.73E+02
indeno(1,2,3-cd)pyrene	1.47E+01	1.23E+11	1.47E+01
isobutyl alcohol	4.81E+04	2.55E+06	4.81E+04
isophorone	1.85E+04	2.92E+07	1.85E+04
methoxychlor	8.71E+01	1.48E+09	8.71E+01
methyl methacrylate	1.06E+03	5.56E+04	1.06E+03
methylene bromide	1.51E+03	2.75E+04	1.51E+03
methylene chloride	1.07E+03	1.26E+03	1.07E+03
methyl-tert-butyl ether	NA	1.39E+06	1.39E+06
n-butylbenzyl phthalate	3.48E+03	6.52E+09	3.48E+03
nitroaniline, o-	8.07E+03	2.45E+06	8.07E+03
nitrobenzene	8.61E+01	1.78E+05	8.61E+01
nitrosodiphenylamine, p-	8.02E+02	1.03E+07	8.02E+02
n-nitrosodimethylamine	2.60E-01	1.38E-02	1.38E-02
n-nitroso-di-n-propylamine	2.48E+00	4.46E+02	2.48E+00
n-nitrosodiphenylamine	1.96E+03	4.80E+09	1.96E+03
o-chlorotoluene	3.14E+03	1.05E+05	3.14E+03
p-chloro-m-cresol	3.48E+04	NA	3.48E+04
pentachlorophenol	3.04E+02	3.09E+07	3.04E+02
phenol	1.04E+04	3.14E+09	1.04E+04
pyrene	2.35E+03	4.11E+10	2.35E+03
styrene	3.02E+05	7.58E+06	3.02E+05
tetrachloroethene	3.36E+02	7.52E+03	3.36E+02
toluene	3.12E+04	2.41E+05	3.12E+04
toxaphene	1.47E+01	9.16E+04	1.47E+01
trans-1,2-dichloroethene	2.68E+03	1.47E+04	2.68E+03

TABLE 11
Health-Based Remediation Goals (HBRGs) for
Organic Constituents Soil Exposure Pathways (mg/kg)

Constituent	Construction Worker Initial HBRG	Commercial/ Industrial User Initial HBRG	Final HBRG
trichloroethene	1.05E+03	1.39E+03	1.05E+03
trichlorofluoromethane	1.03E+04	4.89E+04	1.03E+04
vinyl acetate	5.41E+03	2.31E+05	5.41E+03
vinyl chloride	5.16E+00	1.81E-01	1.81E-01
xylenes	3.26E+04	2.61E+07	3.26E+04

TABLE 11
Health-Based Remediation Goals (HBRGs) for
Inorganic Constituents Soil Exposure Pathways (mg/kg)

Compound	Initial HBRG	ILM Background*	Final HBRG
aluminum	NT	3.63E+04	3.63E+04
antimony	9.05E+00	5.00E+00	9.05E+00
arsenic	8.87E+00	1.40E+01	1.40E+01
barium	2.52E+03	2.81E+02	2.52E+03
beryllium	1.56E+01	7.40E-01	1.56E+01
cadmium	1.64E+01	8.80E-01	1.64E+01
calcium	NT	3.80E+04	3.80E+04
chromium iii	3.22E+04	4.10E+01	3.22E+04
chromium vi	9.73E+01	NA	9.73E+01
cobalt	NT	2.00E+01	2.00E+01
copper	1.26E+03	5.30E+01	1.26E+03
cyanide	6.99E+02	NA	6.99E+02
iron	NT	6.05E+04	6.05E+04
lead	NT	1.11E+02	1.11E+02
mercury	6.78E+00	2.80E-01	6.78E+00
molybdenum	1.24E+03	2.30E+01	1.24E+03
nickel	2.39E+02	2.90E+01	2.39E+02
potassium	NT	8.26E+03	8.26E+03
selenium	1.82E+02	1.24E+03	1.24E+03
silver	1.30E+02	2.39E+02	2.39E+02
sodium	NT	1.96E+03	1.96E+03
thallium	NT	1.10E+01	1.10E+01
titanium	NT	1.95E+03	1.95E+03
vanadium	8.37E+01	8.20E+01	8.37E+01
zinc	8.73E+03	1.98E+02	8.73E+03

NOTES:
*ILM background values provided in Baseline Risk Assessment (G&M 1996).
NT = No Toxicity values available for calculation of HBRG
NA = Not Available.